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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/588,115	05/31/2000	Jueng Gil Lee	CDST-C130-1P	7774

7590

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EXAMINER

ROY, SIKHA

ART UNIT

PAPER NUMBER

2879

DATE MAILED: 06/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/588,115

Applicant(s)

LEE ET AL.

Examiner

Sikha Roy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 January 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 20-24 and 47-54 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 20-24 and 47-54 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 9.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 7, 2003 has been entered.

Specification

The abstract of the disclosure is objected to because it is long. Correction is required. See MPEP § 608.01(b).

The abstract should be in the narrative form and generally limited to a single paragraph on a separate sheet within the range of 50-150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract in the computer tape used by the printer is limited.

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 20- 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent 5,894,188 to Chakvorty et al. in view of U.S. Patent 6,320,138 to Kamiya et al.

Regarding claim 20, Chakvorty et al. disclose (column 3 lines 6-15, column 5 lines 40-62, Fig. 1C)) an electrode (cathodic) structure for a flat panel display comprising a metallic layer (aluminum strip) 103 over which a protective layer (cladding layer) 104 is deposited. Mask and etch steps are performed to form the electrode (column 6 lines 8,9 step 213, Fig 2).

Claim 20 differs from Chakvorty et al. in that Chakvorty et al. do not exemplify the metal alloy layer including neodymium having a concentration of between greater than three and six atomic percent in the structure of multi-layer electrode.

Kamiya in relevant art of conductor formed of low resistance aluminum alloy discloses (column 6 lines 24-30 Figs. 7-9) that it is preferable to set the concentration of Nd at about 4 atomic percent in the Al-Nd alloy thin film of the conductor. Kamiya further discloses that with this concentration of greater than 3 atomic percent of neodymium the specific resistance of the alloy is low and also the occurrence of hillocks and pinholes can be suppressed.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to modify the metal layer of the electrode structure of Chakvorty et al. by the metal alloy layer as taught by Kamiya for low electrical resistance and fewer occurrences of defects such as hillocks in the multi-layer electrode.

Regarding claim 21, Chakvorty and Kamiya disclose Al alloy produced by mixing Nd (neodymium) with aluminum in an amount of up to 4 atomic percent.

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Regarding claim 23, Chakvorty et al. disclose (column 8 lines 19-26) that the refractory metals molybdenum and tungsten which are easy to process, do not interdiffuse with aluminum and make good electrical contact with aluminum conductors and the overlying layers are used as protective (cladding) layer.

Regarding claims 22 and 24 Chakvorty et al. and Kamiya disclose the claimed invention except for the limitations of thickness of the metal alloy layer and the protective layer to be approximately 2500°A and 1200°A respectively. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. Thus, it would have been obvious to one of ordinary skills in the art at the time the invention was made to provide the values of the thickness of the metal alloy layer and protective layer, since discovering an optimum value of a result variable is considered within the skills of the art.

Claims 47-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent 5,894,188 to Chakvorty et al. and U.S. Patent 6,320,138 to Kamiya et al. and further in view of EP 731507 A1 to Takayama.

Referring to claim 47, Chakvorty et al. in view of Kamiya disclose electrode structure for a flat panel display, the electrode comprising Al-Nd alloy layer including neodymium in an amount of 4 atomic percent, a protective (cladding) layer deposited on the metal alloy layer formed by mask and etch steps.

Claim 47 differs from Chakvorty and Kamiya in that Chakvorty and Kamiya do not disclose the barrier layer disposed above the metal alloy layer in the multi layer electrode.

Takayama in analogous art of electrode material discloses (page 4 lines 35,36) a barrier layer formed by anodically oxidizing the metal-alloy conductor line. It is noted that the anodically oxidized conductor has high dielectric strength and excellent insulating characteristic.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to include the barrier layer of Takayama on the metal alloy layer of Chakvorty and Kamiya for obtaining a conductor line layer with high dielectric strength and excellent insulating characteristic.

Claim 48 essentially recites the same limitation as of claim 21 and hence is rejected for the same reason.

Regarding claim 50, Takayama disclose (page 4 lines 35,36) a barrier layer formed by anodically oxidizing the metal-alloy conductor line. It is noted that the anodically oxidized conductor has high dielectric strength and excellent insulating characteristic.

Claim 52 essentially recites the same limitation as of claim 23 and hence is rejected for the same reason.

Regarding claims 49,51 and 53 Chakvorty et al., Kamiya et al. and Takayama disclose the claimed invention except for the limitations of thickness of the metal alloy layer, barrier layer and the protective layer to be approximately 2500°A, 100°A and 1200°A respectively. Takayama discloses (page 4 line47) Al alloy thin layer together with anodically oxidized film having a thickness of 4000°A or less. The total thickness of

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the multi-layer electrode as claimed in 49,51 and 53 is approximately 3800°A. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 205 USPQ 215 (CCPA 1980). Thus, it would have been obvious to one of ordinary skills in the art at the time the invention was made to provide the values of the thickness of the metal alloy layer and protective layer, since discovering an optimum value of a result variable is considered within the skills of the art.

Regarding claim 54, the Examiner notes that the claim limitation that “the multi-layer electrode is etched using a wet etchant with volume percentages of constituents of approximately 70-80 percent H_3PO_4 ; approximately 10-15 percent HNO_3 ; approximately 7-12 percent CH_3COOH and approximately 2-8 percent H_2O to form desired sloped profile “ is drawn to a process of manufacturing which is incidental to the claimed apparatus. It is well established that a claimed apparatus cannot be distinguished over the prior art by a process limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the subject product-by-process claim limitation is not afforded patentable weight (see MPEP 2113). Therefore, it is the position of the examiner that it would have been obvious to one of ordinary skill in the art that the multi-layer electrode disclosed by Chakvorty et al., Kamiya et al. and Takayama is at least a fully functional equivalent to the Applicant's claimed multi layer electrode as evidenced by claim 54.

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Response to Arguments

Applicant's arguments with respect to claims 20 and 47 have been considered but are moot in view of the new ground(s) of rejection.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sikha Roy whose telephone number is (703) 308-2826. The examiner can normally be reached on Monday-Friday 8:00 a.m. – 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (703) 305-4794. The fax phone number for the organization is (703) 308-7382.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

S.R.
Sikha Roy
Patent Examiner
Art Unit 2879


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